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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/567,771

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Masakazu Hoshino

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EXAMINER

ARENDT, PAISLEY L

ART UNIT

PAPER NUMBER

2883

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/567,771

**Applicant(s)**

HOSHINO ET AL.

**Examiner**

PAISLEY L. ARENDT

**Art Unit**

2883

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 April 2011.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.  
4a) Of the above claim(s) 2,4 and 6-12 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1,3 and 5 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 09 February 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-945)  
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 02/09/2006, 09/22/2006, 07/17/2007, 12/16/2009  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Species A, drawn to Figs. 1 and 4, in the reply filed on April 26, 2011 is acknowledged. Accordingly, claims 2, 4 and 6-12 are withdrawn from further consideration, and claims 1, 3 and 5 are examined as follows.

### ***Drawings***

2. The drawings are objected to because of the following informalities:
  - a. Reference character "70" in Fig. 5(a) is presumed to be intended as separation plate "61" (see par. [0042]).
  - b. Reference characters "30-33" in Figs. 10-13 have been used to designate multiple different elements of through-holes, resistance plates and flow channels (see par. [0061-0062 and 0064]).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the

renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

3. The disclosure is objected to because of the following informalities:
    - a. Reference character "132" in Fig. 3 is not mentioned in the specification.
    - b. Reference character "46" in Fig. 14 is not mentioned in the specification.
    - c. Par. [0032 and 0052] – pump "29" is presumed to be intended as pump "129" (see Figs. 2, 3 and 9).
    - d. Par. [0053] – flow channels "10 and 11" are presumed to be intended as "8 and 9" (see Figs. 8-9).
    - e. Par. [0054] – flow channels "16 and 17" are presumed to be intended as "15 and 16" (see Figs. 8-9).
    - f. Par. [0066], line 11 – box-like members "42 and 42" are presumed to be intended as "42 and 43" (see Fig. 14).
    - g. Par. [0066], line 13 – introduction/delivery tubes "42 and 43" are presumed to be intended as "40 and 41" (see Fig. 14).
- Appropriate correction is required.

***Claim Objections***

4. Claim 3 is objected to because of the following informalities:

a. Claim 3, line 5 – “at *least* a transparent plate” is presumed to be intended as “at *least* a transparent plate”.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 1, 3 and 5** are rejected under 35 U.S.C. 102(b) as being anticipated by Numata et al. (US 6,256,083 B1).

Regarding **claim 1**, Numata discloses a liquid crystal projector (see Fig. 3), comprising:

a light source (12, Fig. 3);

an optical element (14, 15 and 17, Fig. 3) for changing the light from said light source into a parallel light, to be divided into three (3) light beams (col. 7, lines 29-43; col. 11, lines 17-44; and col. 13, line 48 – col. 14, line 3);

three (3) kinds of liquid crystal panels (11, Fig. 3, and 11R, 11G and 11B, Figs. 8-9) for transmitting the three (3) light beams divided by said optical element therethrough, so as to modulate intensity thereof (col. 11, lines 17-35);

an optical synthesizing means (41, Figs. 7-15) for synthesizing the three (3) light beams, passing through said three (3) kinds of liquid crystal panels, to be modulate intensity thereof (col. 14, lines 26-33);

a projection means (1b, Fig. 3, and 1, Figs. 8-10, 12 and 13) for projecting the three (3) light beams, which are synthesized by said optical synthesizing means (col. 14, lines 34-41); and

a liquid cooling cycle, including a pump (see 25, Figs. 5 and 7, for instance) and a radiator (see 6 and 19, Figs. 1, 4-7, 11, 14 and 15) therein, for circulating a liquid coolant (5, Figs. 1, 4-8 and 10-15; col. 9, lines 6-13) within said three (3) kinds of liquid crystal panels, so as to conduct cooling thereof (col. 7, line 63 – col. 8, line 12; col. 10, lines 17-47; col. 12, lines 40-47; col. 12, line 55 – col. 13, line 8; and col. 16, lines 17-29), wherein

each of said three (3) kinds of liquid crystal panels defines a flow channel (see area containing 5, Figs. 1, 4-8 and 10-15) for the liquid coolant between a surface of said liquid crystal panel (see 2, Figs. 1, 4-8 and 10-15) and a transparent member (see 3b, Fig. 1, for instance) to be disposed opposing thereto, respectively, and further, said flow channel includes a high-resistance flow channel being flat and uniform in thickness thereof (see channel containing 5 in between 2 and 3b, Fig. 1, for instance), covering a liquid crystal panel area of said liquid crystal panel, and also a buffer portion formed neighboring to a one of upstream side and downstream side of said high-resistance flow channel (see larger areas containing 5 at upstream and downstream sides of high-resistance flow channel, Fig. 1, for instance) (The high-resistance flow channel is considered to have a “high-resistance flow” since it occupies a smaller area relative to the “buffer portions” which occupy a larger area.).

Regarding **claim 3**, Numata discloses a liquid crystal panel (2, Figs. 1, 2, 4-8 and 10-15, and 11, Figs. 3 and 8-9) for use in a liquid crystal projector (see Fig. 3), comprising:

two (2) pieces of transparent substrates (51 and 52, Fig. 2), enclosing a liquid crystal between them (50, Fig. 2; col. 8, lines 52-63); and further

at [least] a transparent plate (see 3b, Fig. 1, for instance), being disposed opposing to one surface of said two (2) pieces of transparent substrates, so as to form a flow channel for a liquid coolant between them (see area containing 5, Figs. 1, 4-8 and 10-15; col. 9, lines 6-13), wherein

said flow channel defines a high-resistance flow channel being flat and uniform in thickness thereof (see channel containing 5 in between 2 and 3b, Fig. 1, for instance), and further comprises a buffer portion neighboring to a one of upstream side and downstream side of said high-resistance flow channel (see larger areas containing 5 at upstream and downstream sides of high-resistance flow channel, Fig. 1, for instance) (The high-resistance flow channel is considered to have a “high-resistance flow” since it occupies a smaller area relative to the “buffer portions” which occupy a larger area.).

Regarding **claim 5**, Numata discloses a liquid cooling apparatus for cooling liquid crystal panels (2, Figs. 1, 2, 4-8 and 10-15, and 11, Figs. 3 and 8-9) for use in a liquid crystal projector (see Fig. 3), each panel having two (2) pieces of transparent substrates (51 and 52, Fig. 2), enclosing a liquid crystal between them (50, Fig. 2; col. 8, lines 52-63), with a liquid coolant (5, Figs. 1, 4-8 and 10-15; col. 9, lines 6-13), comprising:

at least a transparent plate (see 3b, Fig. 1, for instance), being disposed opposing to one surface of said two (2) pieces of transparent substrates, so as to define therebetween a high-

resistance flow channel being flat and uniform in thickness thereof (see channel containing 5 in between 2 and 3b, Fig. 1, for instance), covering a liquid crystal panel area of said liquid crystal panel, and also a buffer portion neighboring to said flow channel (see larger areas containing 5 neighboring said high-resistance flow channel, Fig. 1, for instance) (The high-resistance flow channel is considered to have a “high-resistance flow” since it occupies a smaller area relative to the “buffer portion” which occupies a larger area.); further

a driving means (see 25, Figs. 5 and 7, for instance) for the liquid coolant, connected to said buffer portion of said liquid crystal panel (see Figs. 5 and 7); and

a heat radiator means (see 6 and 19, Figs. 1, 4-7, 11, 14 and 15) for radiating heat of said liquid crystal panel, which is received in said flow channel into an outside, whereby building a liquid cooling cycle (col. 7, line 63 – col. 8, line 12; col. 10, lines 17-47; col. 12, lines 40-47; col. 12, line 55 – col. 13, line 8; and col. 16, lines 17-29).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAISLEY L. ARENDT whose telephone number is (571)270-5023. The examiner can normally be reached on MON - FRI, 9:00 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Robinson can be reached on 571-272-2319. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Paisley L. Arendt/  
Patent Examiner, Art Unit 2883

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